$$\frac{R_2}{R_1+R_2}$$

Solution to Exercise 3.5.1

The power consumed by the resistor R1 can be expressed as

$$(v_{in}-v_{out})i_{out}=\frac{R_1}{(R_1+R_2)^2}v_{in^2}$$

Solution to Exercise 3.5.2

$$\frac{1}{R_1+R_2}v_{in^2}=\frac{R_1}{(R_1+R_2)^2}v_{in^2}+\frac{R_2}{(R_1+R_2)^2}v_{in^2}$$

Solution to Exercise 3.6.1

Replacing the current source by a voltage source does not change the fact that the voltages are identical.

Consequently,

$$v_{in}=R_2 i_{out}$$

or

$$i_{out}=\frac{v_{in}}{R_2}$$

. This result does not depend on the resistor ***R*1**, which means that we simply have a resistor (***R***2) across a voltage source. The two-resistor circuit has no apparent use.

Solution to Exercise 3.6.2

$$R_{eq}=\frac{R_2}{1+\frac{R_2}{R_L}}$$

. Thus, a 10% change means that the ratio

$$\frac{R_2}{R_L}$$

must be less than 0.1. A 1% change means that

$$\frac{R_2}{R_L}<0.01.$$

Solution to Exercise 3.6.3

In a series combination of resistors, the current is the same in each; in a parallel combination, the voltage is the same. For a series combination, the equivalent resistance is the sum of the resistances, which will be larger than any component resistor's value; for a parallel combination, the equivalent conductance is the sum of the component conductances, which is larger than any component conductance. The equivalent resistance is therefore smaller than any component resistance.

Solution to Exercise 3.7.1

$$v_{oc}=\frac{R_2}{R_1+R_2}v_{in}$$

and